Section I.

Please amend the claims as set out in **Section II** (Amendments to the Claims) in the format proposed by the U.S. Patent and Trademark Office for adoption in July, 2003 revising 37 C.F.R. §1.121, pursuant to the Notice published on February 25, 2003 at 1267 OG 106, accepting current submissions of amendments in such revised format.

Section II. (Amendments to the Claims)

Claims 1-3, 5-9, 35, and 39-42 are hereby amended, as follows:

1. (Currently amended) A gallium nitride-based HEMT device, comprising ~~an at least partially relaxed~~ a channel layer comprising ~~an~~ InGaN alloy and at least one additional layer over said channel layer, wherein said at least one additional layer comprises material selected from the group consisting of AlGaN, GaN, and InGaN, with the proviso that when said at least one additional layer comprises AlGaN material, said AlGaN material is $Al_xGa_{1-x}N$, wherein x is less than 0.2.

2. (Currently amended) The device of claim 1, ~~comprising~~ wherein said at least one additional layer comprises AlGaN material, forming an AlGaN/InGaN heterostructure with the channel layer.

3. (Currently amended) The device of claim ~~1~~ 2, further comprising a GaN layer~~, an InGaN layer over the GaN layer, and an AlGaN layer over the InGaN layer~~ underneath said channel layer.

4. (Original) The device of claim 1, which does not comprise an aluminum-containing layer.

5. (Currently amended) The device of claim 4, wherein said at least one additional layer comprises GaN material, forming ~~comprising~~ a GaN/InGaN HEMT with the channel layer.

6. (Currently amended) The device of claim 4, wherein said at least one additional layer comprises InGaN material, forming ~~comprising~~ an InGaN/InGaN HEMT with the channel layer.

7. (Currently amended) The device of claim ~~1~~ 2, ~~comprising an AlGaN layer~~ wherein said AlGaN material is doped.

8. (Currently amended) The device of claim ~~7~~ 2, wherein the AlGaN ~~layer~~ material is undoped.

9. (Currently amended) The device of claim 7, wherein the AlGaN ~~layer~~ material comprises a dopant providing an increased sheet density in relation to a corresponding undoped AlGaN layer.

10-34. (Cancelled).

35. (Currently amended) The device of claim ~~1~~ 2, wherein said ~~InGaN alloy contains an amount of indium, In/(In+Ga), that does not exceed 0.20~~ AlGaN material is $Al_xGa_{1-x}N$, wherein x is about 0.1.

36. (Previously added) The device of claim 1, wherein the channel layer comprising an InGaN alloy has a thickness in a range of from about 100 to about 5000 nanometers.

37. (Previously added) The device of claim 1, wherein the channel layer comprising an InGaN alloy has a thickness in a range of from about 200 to about 2000 nanometers.

38. (Previously added) The device of claim 1, wherein the channel layer comprising an InGaN alloy has a thickness in a range of from about 400 to about 1000 nanometers.

39. (Currently amended) The device of claim 1, comprising:

a substrate;

a GaN buffer layer on said substrate;

said channel layer on said GaN buffer layer;

~~an AlGaN spacer layer~~ said at least one additional layer on said channel layer, said at least one additional layer comprising undoped AlGaN material and forming an AlGaN spacer layer; and

a doped AlGaN donor layer on said AlGaN spacer layer.

40. (Currently amended) The device of claim 1, comprising:

a substrate;

a GaN buffer layer on said substrate;

said channel layer on said GaN buffer layer;

~~a GaN spacer layer~~ said at least one additional layer on said channel layer, said at least one additional layer comprising undoped GaN material and forming a GaN spacer layer; and

a doped ~~AlGaN~~ GaN donor layer on said ~~AlGaN~~ GaN spacer layer.

41. (Currently amended) The device of claim 1, comprising:

a substrate;

a GaN buffer layer on said substrate;

said channel layer on said GaN buffer layer;

~~an InGaN spacer layer~~ said at least one additional layer on said channel layer, said at least one additional layer comprising undoped InGaN material and forming an InGaN spacer layer; and

a doped InGaN donor layer on said InGaN spacer layer,

wherein said InGaN spacer layer has a lower InN concentration than said channel layer.

42. (Currently amended) The device of claim ~~7~~ 39, ~~wherein said AlGaN layer contains an amount of aluminum, Al/(Al+Ga), that does not exceed 0.20~~ further comprising a two dimensional electron gas (2DEG) between the InGaN channel layer and the AlGaN spacer layer.

APPENDIX A

Clean Copy of All Pending Claims

1. A gallium nitride-based HEMT device, comprising a channel layer comprising an InGaN alloy and at least one additional layer over said channel layer, wherein said at least one additional layer comprises material selected from the group consisting of AlGaN, GaN, and InGaN, with the proviso that when said at least one additional layer comprises AlGaN material, said AlGaN material is $Al_xGa_{1-x}N$, wherein x is less than 0.2.

2. The device of claim 1, wherein said at least one additional layer comprises AlGaN material, forming an AlGaN/InGaN heterostructure with the channel layer.

3. The device of claim 2, further comprising a GaN layer underneath said channel layer.

4. The device of claim 1, which does not comprise an aluminum-containing layer.

5. The device of claim 4, wherein said at least one additional layer comprises GaN material, forming a GaN/InGaN HEMT with the channel layer.

6. The device of claim 4, wherein said at least one additional layer comprises InGaN material, forming an InGaN/InGaN HEMT with the channel layer.

7. The device of claim 2, wherein said AlGaN material is doped.

8. The device of claim 2, wherein the AlGaN material is undoped.

9. The device of claim 7, wherein the AlGaN material comprises a dopant providing an increased sheet density in relation to a corresponding undoped AlGaN layer.

35. The device of claim 2, wherein said AlGaN material is $Al_xGa_{1-x}N$, wherein x is about 0.1.

36. The device of claim 1, wherein the channel layer comprising an InGaN alloy has a thickness in a range of from about 100 to about 5000 nanometers.

37. The device of claim 1, wherein the channel layer comprising an InGaN alloy has a thickness in a range of from about 200 to about 2000 nanometers.

38. The device of claim 1, wherein the channel layer comprising an InGaN alloy has a thickness in a range of from about 400 to about 1000 nanometers.

39. The device of claim 1, comprising:

a substrate;

a GaN buffer layer on said substrate;

said channel layer on said GaN buffer layer;

said at least one additional layer on said channel layer, said at least one additional layer comprising undoped AlGaN material and forming an AlGaN spacer layer; and

a doped AlGaN donor layer on said AlGaN spacer layer.

40. The device of claim 1, comprising:

a substrate;

a GaN buffer layer on said substrate;

said channel layer on said GaN buffer layer;

said at least one additional layer on said channel layer, said at least one additional layer comprising undoped GaN material and forming a GaN spacer layer; and

a doped GaN donor layer on said GaN spacer layer.

41. The device of claim 1, comprising:

a substrate;

a GaN buffer layer on said substrate;

said channel layer on said GaN buffer layer;

said at least one additional layer on said channel layer, said at least one additional layer comprising undoped InGaN material and forming an InGaN spacer layer; and

a doped InGaN donor layer on said InGaN spacer layer,

wherein said InGaN spacer layer has a lower InN concentration than said channel layer.

42. The device of claim 39, further comprising a two dimensional electron gas (2DEG) between the InGaN channel layer and the AlGaN spacer layer.